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ABSTRACT

This research, commissioned by the U.S. Department of State, Office of Overseas Schools, was designed to determine the status of environmental education in private U.S. and international elementary schools throughout Latin America and the Caribbean. The study population consisted of all 50 dues-paying member schools in the Association of American Schools of Central America, Colombia-Caribbean and Mexico (also known as the Tri-Association). Members include 17 schools in Mexico, 8 schools in Colombia, four schools each in Costa Rica, Guatemala, and the Dominican Republic, 3 schools in Jamaica, 2 schools each in El Salvador, Honduras, and Venezuela, and 1 school each in Nicaragua, Haiti, Ecuador, and Panama. Response rate was 72%, with 36 schools responding. Results of the survey indicated that even in the best situations throughout Central and Latin America, environmental education (EE) is being hindered by lack of available quality regional environmental education curricula, lack of access to teaching materials, and widespread teacher misconceptions about EE infusion. Findings of this study strongly support the need for quality regional EE curriculum development and ongoing teacher training in Latin American schools. Studies involving K-6 teachers in the United States yielded similar results. Teacher perceptions of environmental issues differed from those the community and students considered important, but these teacher perceptions were all compatible with the EE goals and objectives set forth by the United Nations Environmental Programme (UNEP). (Contains 5 figures, 3 tables, and 15 references.) (BT)

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Running Head: STATUS OF ENVIRONMENTAL EDUCATION IN LATIN AMERICA

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Teacher Perceptions Regarding the Status of Environmental Education in Latin American Elementary Schools

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A poster presented at the annual meeting of the American Educational Research Association

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Abstract

This research was commissioned by the U.S. Department of State Office of Overseas Schools and was designed to determine the status of environmental education in private American and international elementary schools throughout Latin America and the Caribbean. The study population consisted of all 50 dues-paying member schools in the Association of American Schools of Central America, Colombia-Caribbean and Mexico (also known as the Tri-Association). Members include 17 schools in Mexico, eight schools in Colombia, four schools each in Costa Rica, Guatemala, and the Dominican Republic, three schools in Jamaica, two schools each in El Salvador, Honduras, and Venezuela, and one school each in Nicaragua, Haiti, Ecuador, and Panama. Results of the survey indicated that even in the best situations throughout Latin America, EE is being hindered by lack of available quality regional environmental education curricula, lack of access to teaching materials, and widespread teacher misconceptions about EE infusion. The findings of this study strongly support the need for quality regional EE curriculum development and ongoing teacher training in Latin American Schools. Studies involving K-6 teachers in the United States yielded similar results. Teachers' perceptions of important environmental issues differed from what the community and students considered important, but these teacher perceptions were all compatible with the EE goals and objectives set forth by the United National Environmental Programme (UNEP).

Introduction

In recent years, a great deal of research has focused on determining the status of environmental education in public elementary, middle, and secondary schools in industrialized (developed) nations, particularly in the United States, Canada, and the United Kingdom. Unfortunately, although environmental education has been a topic of focus in formal educational systems of developed countries for at least 25 years, developing countries throughout Asia, Africa, and Latin America have only recently begun to incorporate environmental education into their formal education programs.

Most efforts aimed at incorporating environmental education into K-12 schools, in Latin America in particular, have been the direct result of government mandates to include environmental education in schools or have developed as a result of administrator or faculty interests in environmental education at individual schools. Unfortunately, due to a variety of limiting factors, including lack of a functioning infrastructure for coordination and administration of public school systems, funding, facilities, and materials shortages, limited public school teacher certification requirements, and lack of compulsory education requirements for children, public schools in Latin America are not presently a viable avenue for systematically exposing young people to comprehensive environmental education programs.

Although the outlook for environmental education in public schools in Latin America is grim at present, the ever-growing private school network in Latin America represents a hopeful alternative. During the past 10 years, the number of private K-12 schools in urban centers in Latin America has skyrocketed. Although many of these schools were originally established to provide children of foreign nationals with access to internationally accredited educational institutions, the percentage of native resident children attending these schools has increased significantly. In fact, throughout Mexico, Central

America, South America, and the Caribbean, the vast majority of students attending American, British, German, and other international private schools are native residents. From an environmental education perspective, this particular population of native resident students is an especially important target group. The native resident children attending these schools are generally the sons and daughters of wealthy and/or influential government, business, industry and community leaders. The parents of these children highly value a quality education and a large percentage of these children pursue college degrees and become future government, business, and industry leaders in their home countries. Exposing this target group to comprehensive environmental education programs during the formative elementary, middle, and high school years could significantly influence the types of important political, economic, and business decisions these future leaders make regarding the environment.

In the early 1990s, American government agencies, such as the United States Department of State, and numerous American-based businesses with interests in Latin America, including General Electric, General Motors, IBM Corporation, and the Coca-Cola Company, expressed an interest in developing a comprehensive environmental education program for private international and American schools throughout the region. With cooperation and grant-funding from the Overseas Schools Advisory Council, the U.S. Office of Overseas Schools, and the Association of American Schools of Central America, Colombia, the Caribbean and Mexico, a study was commissioned to determine the current status of environmental education in private schools in Latin America. This paper summarizes the results and implications of that study at the elementary (K-6) level. Results of the study were used to guide the development, dissemination, and implementation of a new environmental education curriculum

for private Latin American schools. The curriculum is available in both Spanish and English versions and is now being distributed to interested public schools throughout the region as well.

History of the international environmental education movement

During the 1960s, a plethora of newsworthy and highly visible environmental problems, including air pollution, water pollution, toxic waste dumping, and species endangerment set the stage for the emergence of the "environmental" movement in the early 1970s. This phenomenon not only attracted the attention of citizens in the United States, Canada, and Europe, but for the first time, we began to grasp the notion that environmental problems transcended political boundaries and truly represented global concerns. At the United Nations Conference on the Human Environment in Stockholm in 1972, delegates from around the world made many recommendations for solving the world's growing environmental problems. One of the proposed solutions was the establishment of an international program in environmental education (UNESCO, 1977). During this conference, the United National Environmental Programme (UNEP) was established to serve as a coordinating body for leadership and direction regarding environmental initiatives at the international level (UNEP, 1975). Recommendation #96 called for "the development of environmental education as one of the most critical elements in an all-out attack on the world's environmental crises." It further indicated that environmental education should be "broad-based and strongly related to the basic principles outlined in the United Nations Declaration on the new International Economic Order" (UNEP, 1975).

In 1975, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) launched the International Environmental Education Program (IEEP) that now functions to carry out UNEP's work in the field. (WRI, IUCN, UNEP, FAO, UNESCO 1992). The following year, UNESCO

sponsored an international workshop in Belgrade with 65 nations attending to review 15 trend papers in environmental education and to draft a comprehensive report containing guidelines for environmental education programs. This workshop was followed by six regional seminars from which national and regional policies for environmental education were to be adopted. Latin America (including Mexico, Central America, South America, and the Caribbean) constituted one of these six regions. In 1977, an intergovernmental conference on environmental education in Tbilisi met with 340 delegates from the 65 nations and approved an environmental education definition, aims and goals. This declaration has served as a guide for the development and implementation of international environmental education programs for the past 20 years, and was reaffirmed and changed slightly in a 1987 meeting of the delegation (UNESCO, 1992). A major component of this declaration indicated the need to develop national environmental education policies and appropriate curricula and teaching materials to implement such policies (UNESCO, 1977).

In 1992 the book, *Global Diversity Strategies* was published by the World Resources Council, The World Conservation Union (IUCN), and the United Nations Environment Programme in consultation with the Food and Agriculture Organization (FAO) and UNESCO to set up guidelines for conserving biodiversity. One of the objectives was written as: Increase appreciation and awareness of biodiversity' values and importance. Three actions were suggested as part of this objective: Action 72: "Build Awareness of the importance and values of biodiversity into popular culture," Action 73: "Use the formal education system to increase awareness about biodiversity and the need for its conservation" and Action 74: "Integrate biodiversity concerns into education outside of the classroom". (WRI, IUCN, UNEP, FAO, UNESCO, 1992)

Clearly there is a mandate from several organizations under the auspices of the United Nations for countries to educate their young citizens in environmental education and to do so through the development of quality curricula and teaching materials. Unfortunately, it appears that most of these mandates and calls have been unheeded in developing regions of the world, such as Latin America. Research to accompany these mandates is not reflected in the literature. In reviewing UNESCO-sponsored documents and publications for the years 1994 and 1995, most education publications centered around equity for gender and class, educational management, population growth, employment, educational quality, relevance, and equal access, (UNESCO, 1994). During 1995, three publications dealing with teachers' continuing education and training were written in Sri Lanka, Pakistan, and Nigeria, but none about Latin America. (UNESCO, 1995). Currently published research papers about the status of EE in Latin America are limited. To celebrate the 20th anniversary of the Tbilisi Doctrine and to promote education for sustainability, an international conference was held in Thessaloniki, Greece in December of 1997. The result of the conference was the Thessaloniki Declaration, which set the stage for education for sustainability and all but eliminated the term environmental education (Knapp, 2000). The document listed actions to promote education for sustainability such as: creating action plans for formal education, funneling more money into public education, and changing and improving the way that teachers are trained (Knapp, 2000). This doctrine further justifies the need for more environmental education research and development activities in developing regions of the world, including Latin America.

Summary of Environmental Education Research in Latin America and the Caribbean

One barrier causing delayed development of environmental education in developing countries is the attempt to transfer environmental education models from the United States and implement them elsewhere. But, this does not work in Latin American schools because teachers generally have no more than a high school education, drop out rates are high, teachers do not always have the luxury of teaching just one grade level at a time, and many rural schools lack the needed supplies to implement EE activities (Ham & Castillo, 1990).

Based on a 1994 study of environmental education in the school systems of Latin America and the Caribbean, acceptance and growth of formal environmental education were indicated by two points: 1) nine of the 15 countries involved in the study included a definition of environmental education in their curricula, and 2) the same number of countries either have, or are in the process of producing, a national environmental education plan. Although nine of the countries have a definition of EE that is similar to the one used as a guideline in the study "education that focuses on establishing a bridge between the natural and the social sciences, with an emphasis on teaching the environmental values, skills, and behaviors needed to create active and aware citizens" in practice most of the countries have tended to equate traditional natural science instruction with the teaching of environmental education. There is a definite lack of consolidation among curriculum developers, teachers, and resource materials. The instructional materials available for EE in Latin America and the Caribbean are of high quality, but the countries have no mechanisms for exchanging these materials (Arias-La Forgia, 1994). This study also found that most teachers in Latin America and the Caribbean do not receive any training in

environmental education. In the countries that do teach about the environment, teachers use active methods. Most school-based environmental education programs in these countries are run by non-governmental organizations (Arias-La Forgia, 1994).

Regarding the Caribbean specifically, environmental education is not a high priority. In a comprehensive study of Caribbean National environmental action plans, (NAEPS) Bynoe and Hale (1997) found that although, their governments recognize the importance of environmental education as a mechanism to achieve environmental protection, the environmental education policies that have been proposed have not been implemented. These countries face much environmental destruction due to their economic activities, which rely on the use of their natural resources. They are also under development pressure as a means to alleviate some of their poverty. To move towards a more sustainable use of natural resources, regional environmental action plans are needed, but Caribbean governments have not implemented any resources management plans. Neither environmental issues nor environmental education are being considered in the policy making process. The people of the Caribbean demonstrate very low levels of environmental knowledge and what factors interact to create environmental problems. Any EE that does exist is supported by non-governmental organizations, and thus, is unorganized.

The implementation of EE in the Caribbean has faced barriers similar to those reported by U.S. teachers (Ham & Sewing, 1998) such as: lack of training, resources and materials, funding, and the low priority given to EE. The countries of the Caribbean have created National Environmental Action Plans to promote environmental awareness. Most of the action plans

studied did have provisions for public environmental awareness and for formal and non-formal EE teaching, but no country has a budget for the implementation of environmental education. Five of the eight countries studied included provisions for EE teacher training in their action plans and few mentioned links between environmental education and economic or political issues. In only two countries is there a single agency in charge of environmental education.

The results of Bynoe and Hale's analysis indicate that the countries of the Caribbean have not as of yet taken EE seriously in their National Environmental Action Plans. Caribbean governments realize the importance of environmental education in environmental protection, but have yet to make the necessary provisions to implement EE policies. To combat these problems in EE in the Caribbean, environmental education needs to be ranked as a high priority by policy makers, which will then allow for an EE budget and the necessary legislation to begin implementing the EE policies that are in place (Bynoe & Hale, 1997).

Justification of the Study

Environmental education curriculum development and implementation has never been more urgent in Latin America. This region of the world is economically underdeveloped, with a human population growth rate of 3.0% per year, and a large proportion of its population is under 15 years of age. During the past decade, the human population in Latin American countries has increased significantly. Currently, four of the 10 largest cities in the world (each with more than 10 million residents) are in Latin America (Marshall, 1993) and in the decade to come, three billion young people (mostly in developing countries) will enter their reproductive years. More than 90% of the projected increase in the world's population in the next 30 years will take place in developing countries in Africa, Asia, and Latin America

(Kidron & Segal, 1991). Between now and the year 2025, the population in these areas will increase by about three billion people while only 166 million people will be added to the populations of developed regions of the world such as the U.S., Europe, and Canada. The people of Latin America suffer from numerous resource and economic inequities. Ironically, developing regions of the world like Latin America contain the greatest diversity of flora and fauna and contain many of the last intact remnants of unique and fragile ecosystems including tropical rainforests, coral reefs, sea grass beds, and mangrove forests. These ecosystems are particularly vulnerable to development pressures associated with projected human population growth. Therefore, environmental education programs must be developed and targeted for use in areas facing the greatest population growth and corresponding environmental degradation.

Although the proliferation of environmental education programs in K-12 schools in developed countries is a positive step in the right direction, more comprehensive environmental education programs must be developed and targeted for use in areas with the greatest proportion of population growth and corresponding environmental degradation (i.e. developing countries). To make sure such programs are successful, it is important to first conduct a needs assessment and survey stakeholders such as teachers, students, and parents. Results of this preliminary research can be used to identify limitations, concerns, barriers, and interests of those who will actually use the curriculum, thus ensuring that the resulting program will actually be implemented as intended.

Methods

Study Sample

In order to determine the factors affecting the status of environmental education in private schools in Latin America, a survey was developed and mailed to a representative group of American and international schools in the region. The study population consisted of all 50 dues-paying member schools in the Association of American Schools of Central America, Colombia-Caribbean and Mexico (also known as the Tri-Association). Members include 17 schools in Mexico, eight schools in Colombia, four schools each in Costa Rica, Guatemala, and the Dominican Republic, three schools in Jamaica, two schools each in El Salvador, Honduras, and Venezuela, and one school each in Nicaragua, Haiti, Ecuador, and Panama. About half of these schools are "American" schools using U.S.-based curricula and the other half are "international" schools with no tie to a specific developed country's curriculum. A survey and cover letter was mailed to the director of each school. School directors were asked to distribute the surveys to all of their teachers and submit a collated summary of mean responses. Data were analyzed using schools (not individual teachers) as the unit of analysis. Schools were given six weeks to respond to the survey. Thirty-six of the schools completed the survey (a 72% response rate).

Study Instrument

The survey consisted of both fixed response and open-ended items. The first part contained 19 multiple choice items focusing on aspects such as the amount of time spent on environmental education, the subjects in which environmental education is addressed, places for EE infusion, teacher comfort levels with EE, teacher training in EE, and perceptions regarding the quality of EE teaching and existing school-based environmental education programs, resources, and materials. The second part contained three open-ended items focusing on teacher, student, and community perceptions regarding the most

important environmental issues. Respondents were invited to include additional written comments as well.

Results

Teacher Turnover

Since teacher turnover is a major issue in both public and private schools in Latin America, the first item on the survey asked about the average length of time elementary teachers stay at each school. About one third of the teachers in these schools (34%) stay 4-6 years while slightly fewer (31.5%) stay 2-4 years. Only about one-fourth (24%) of teachers stay more than six years and 10.5% stay less than two years. It is important to note that the most highly educated teachers, especially those from the United States, Canada and other developed countries, stay four years or less while the vast majority of local-hire teachers stay six years or longer.

Time Spent on Environmental Education

Since the expectations and activities vary so greatly between primary (Grades K-2) and elementary (Grades 3-6) classes in overseas schools, questions regarding the amount of time spent on EE were divided for these two groups. Each group first indicated the average amount of time currently spent on EE at their school each week and then indicated how much time they thought should be spent on EE at their school each week. Results for these items are included in Figures 1 and 2.

Figure 1: Actual and Ideal Time Spent on EE each week Grades K-2
(Percent of respondents choosing each response)

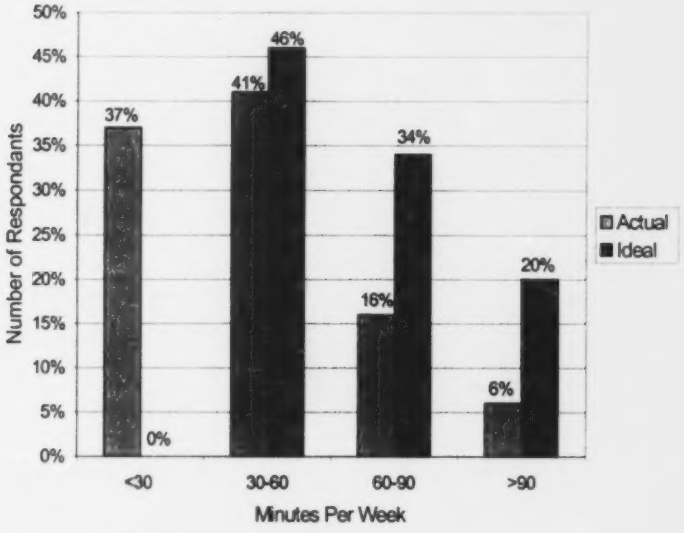
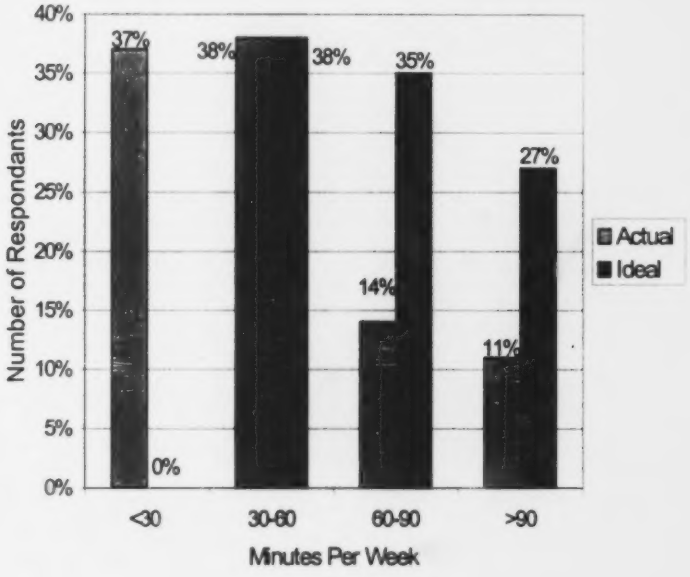


Figure 2: Actual and Ideal Time Spent on EE each week Grades 3-6
(Percent of respondents choosing each response)



In both grade level groups, more than one third of the schools responding spend less than 30 minutes on environmental education each week. The most common actual time allotment for EE in both grade level groups is 30 to 60 minutes each week. This translates into one to two "lessons" per week, a relatively small amount of time given the fact that the typical elementary school student week consists of approximately 1500 minutes of instructional time. As expected, both grade level groups think more time should be spent on EE than is currently being spent and all respondents think EE should be addressed at least 30-60 minutes per week. It is also encouraging to note that a significant number of respondents think EE should be addressed more than 90 minutes each week.

Length of Environmental Education Lessons

Respondents were also asked what they thought was the ideal length of an elementary level environmental education "lesson." The majority (67%) thought lessons should be 30-45 minutes long, while another 17% thought 45-60 minutes was optimum. Only a few (8%) thought lessons should be longer than 60 minutes and another 8% thought lessons should be less than 30 minutes. Several surveys contained additional written comments regarding this question, indicating that time allotments should increase with higher grade levels. A few teachers also commented that environmental education should be continuous and embedded in other lessons, thus making it difficult to specify an actual time limit. Based on the results of this survey, it appears that most elementary students in private Latin American schools experience at least one complete 30-45 minute environmental education "lesson" each week.

Quality of Existing Environmental Education Programs

Respondents were asked to indicate their perceptions regarding the quality of elementary level environmental education currently occurring at their schools. Response choices ranged from poor to

exceptional. More than one third (36%) believe it is poor, another third (31%) believe it is adequate, one-fourth (25%) believe it is good and only 8% believe it is exceptional. Additional questions asked respondents to indicate their perceptions regarding specific aspects of their school's environmental education program, including access to high quality EE curricula and teaching resources, the quality of EE library and audiovisual materials at their schools, and the availability of natural outdoor instructional areas at their schools. Responses to these items are summarized in Tables 1 and 2.

Table 1. Quality and Availability of EE Teaching Resources
(Percent of respondents choosing each response)

	Response Choice			
Category				
	Poor	Adequate	Good	Excellent
Curricula	42%	30%	25%	3%
AV/Library Materials	28%	42%	25%	5%

Table 2. Quality and Availability of Natural Outdoor Instructional Areas
(Percent of respondents choosing each response)

	Response Choice			
	None	Minimal	Adequate	Excellent
Outdoor Nature Areas	25%	39%	0%	36%

These responses indicate that very few teachers are pleased with the quality of EE curricula and library and audiovisual materials available to them. Respondents do feel more positive about the quality of audiovisual and library materials than they do about their access to quality EE curriculum resources. It is distressing to note that almost half of the respondents believe they have poor access to quality EE curricula. Obviously, it is difficult to develop effective school-based EE programs without a solid base

of exemplary curriculum resources. Responses to the question about outdoor instructional areas are also troubling. One-fourth of the schools in this survey have no access to outdoor natural areas for EE instruction, but it is encouraging to note that more than one third of the schools in the survey do have access to quality outdoor instructional areas. Written comments included by respondents indicate that schools in highly urbanized areas, such as Mexico City and Bogota, Colombia have much less access to outdoor nature areas than schools in smaller cities and less developed areas, such as Durango, Mexico and Mandeville, Jamaica.

An additional question asked teachers to indicate how useful they thought a regional elementary level EE curriculum would be. An overwhelming 83% of respondents thought such a curriculum would be of great use, 11% felt it would be fairly useful, and 6% felt it would be of some use. No schools felt a regional EE curriculum was not needed. When asked what language they thought the curriculum should be written in, 58% wanted it in both Spanish and English, 36% wanted it in English, and 6% wanted it in Spanish only. It is important to note that English is the language of instruction in most American and international schools overseas, since students eventually hope to attend English-speaking universities in developed countries upon graduation.

Grade Levels and Subjects Including Environmental Education

The next set of survey questions asked respondents to indicate what subjects at their schools currently include EE and what grade levels they thought should include at least some EE. Respondents were also asked whether they thought EE should be integrated across several different subjects or presented as a separate subject. Responses indicate that all teachers believe EE should be taught at all grade levels K-6. In addition, most teachers (89%) believe EE should be integrated across several

different subject areas while 3% believe it should be taught as a separate subject. Eight percent thought it should be both integrated across subjects and taught as a separate subject. Table 3 summarizes subject areas, which currently include EE.

Table 3. Subjects Which Currently Include Environmental Education
(Percent of respondents choosing each response)

Subject	
Science	100%
Social Studies	89%
Reading	75%
Art	75%
Language Arts	72%
Health	56%
Music/Drama	44%
Physical Education	28%
Mathematics	22%

As expected, teachers in Latin American elementary schools most closely associate EE with science and social studies classes. It is interesting to note that about three-fourths of responding schools also include EE in reading, art, and language arts classes. The potential for increasing an EE focus in these schools is especially great for mathematics classes, since only about one in five schools currently infuse EE in math classes.

Perceived Teacher Comfort Levels

The next set of multiple choice questions asked respondents to indicate how comfortable they felt about their background knowledge regarding environmental concepts and issues as well as how comfortable they felt dealing with potentially controversial EE issues such as human population growth. Regarding perceived background knowledge, the majority of respondents (56%) felt somewhat

comfortable, while 39% percent felt very comfortable. Only 5% felt uncomfortable with their level of EE background knowledge. When asked how comfortable they felt dealing with potentially controversial EE issues with their elementary students, 50% said they felt very comfortable, 39% felt somewhat comfortable, and 11% felt uncomfortable. Written comments regarding this question indicate that teachers at lower grade levels, especially grades K and 1 feel less comfortable addressing potentially controversial topics than teachers in upper grade levels, especially grades 5 and 6. Another item asked how comfortable teachers felt dealing with parental concerns associated with their coverage of controversial environmental issues in elementary classes. The vast majority of teachers, 47% and 42% respectively, feel very comfortable to somewhat comfortable dealing with parental concerns. Only 11% of teachers feel uncomfortable dealing with parental concerns. Once again, additional written comments indicate that primary grade teachers are most concerned and uncomfortable dealing with potential parental concerns.

Desire for Inservice Training in Environmental Education

A final multiple choice item asked teachers if they thought EE inservice opportunities should be available at their schools. The vast majority (97%) said yes, and surprisingly, 3% said no. Obviously, inservice training opportunities are generally viewed as a viable tool for improving the quality of school-based EE programs. Such training opportunities could familiarize teachers with new EE curricular resources and help teachers learn how to infuse EE throughout all subjects, not just science and social studies. Inservice training could also provide teachers with more environmental knowledge, thus increasing comfort and confidence levels.

Most Important Environmental Issues

The final open-ended portion of the survey asked respondents to indicate what they personally considered to be the three most important environmental issues/topics today, what their students considered to be the three most important environmental issues/topics and what members of the local community considered to be the three most important environmental issues/topics. Responses to these questions are summarized in Figures 3, 4, and 5.

For teachers, pollution ranked as the number one environmental issue, followed by resource conservation. Overpopulation and deforestation were also considered somewhat important. Topics of least concern to teachers included ozone depletion, the greenhouse effect, and energy issues. These rankings parallel those cited in UNEP's original program goals as cited in the 1975 annual review, where overpopulation and hunger, pollution, and resource use ranked as the top three environmental issues.

Although pollution also ranked as the number one environmental issue on the student list, endangered species ranked second. Written comments indicate that an interest in endangered species is especially strong in younger children. Other topics with fairly high rankings for students included deforestation, recycling, and waste disposal. Topics of less concern included energy issues, oil spills and other water issues, global warming, and pesticides.

For community members, pollution issues also ranked as the number one issue of concern. Other relatively important issues for community members included deforestation, waste disposal, and water issues. Issues like ozone depletion and energy were topics of least concern for community members.

Figure 3: Top Three Important Environmental Issues-Teachers
(Percent of respondents choosing each response)

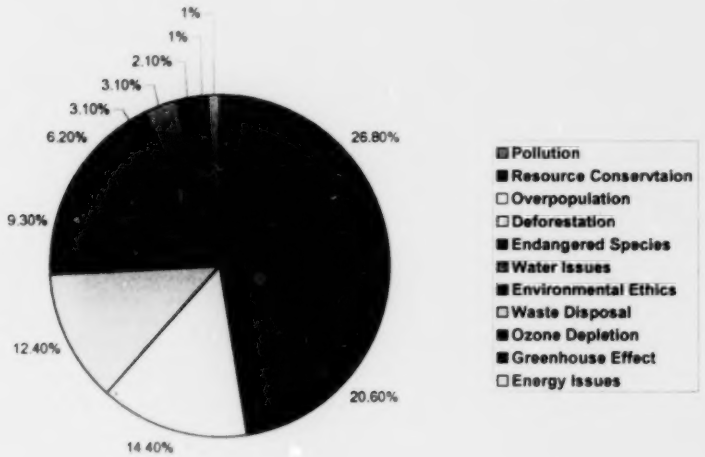


Figure 4: Top Three Important Environmental Issues-Students
(Percent of respondents choosing each response)

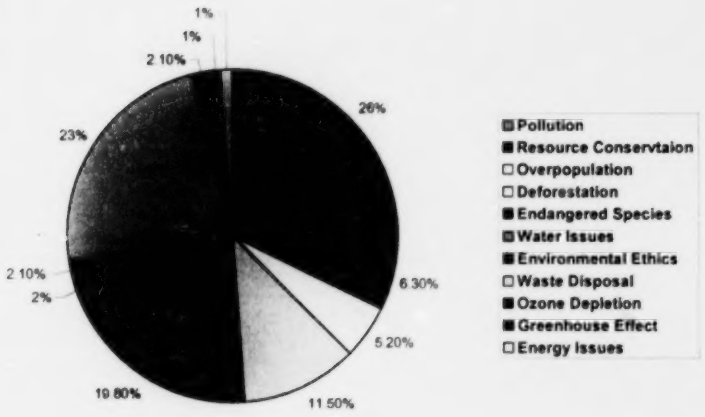
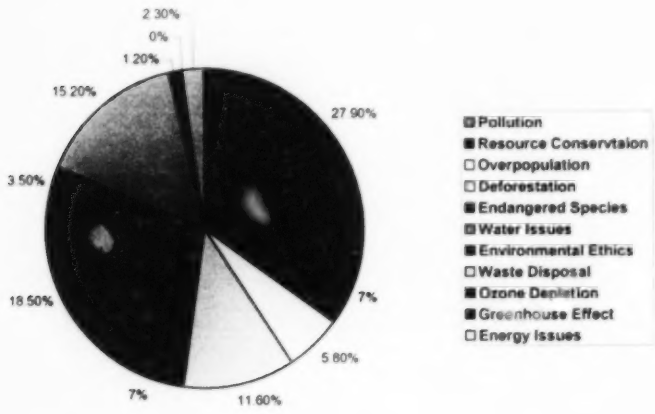


Figure 5: Top Three Important Environmental Issues-Community
(Percent of respondents choosing each response)



Discussions and Implications

According to the results of this survey, teachers in private elementary schools in Latin America spend more time on EE than their counterparts in public U.S. elementary schools. In a survey of Wisconsin schools, Lane, Wilke, Champeau & Sivek (1994), found that 75% of K-6 teachers spend less than 30 minutes per week on EE and only 25% of K-6 teachers spend more than 30 minutes on EE each week. This discrepancy may be due to the fact that most teachers in private Latin American international schools are foreign hires from the United States and Canada and are selected from a highly competitive pool of qualified applicants. Teachers responding to most U.S.-based surveys are usually randomly selected from a large pool of public school teachers who may not be as highly educated or qualified as their overseas private school counterparts.

Like teachers in other parts of the world, teachers in Latin American private schools think more time should be spent on environmental education, but they cite a variety of factors limiting their ability to improve the quality of school-based EE programs. Lack of access to quality EE curriculum resources appears to be a critical limiting factor, accompanied by lack of access to quality outdoor instructional areas in many school sites. Access to EE audiovisual and library resources does not seem to be as much of a problem. These results parallel those of similar U.S.-based studies, such as the Washington and Idaho study conducted by Ham and Sewing (1988) in which elementary teachers cited lack of time in the school day as the most important logistical barrier to environmental education and lack of preparation time as the second most important logistical barrier.

Respondents to this survey clearly indicate a desire for the development of an EE curriculum designed specifically for their region, ideally written in both Spanish and English. In keeping with current philosophies regarding the niche of EE in formal education systems, responses to this survey indicate that infusion across a variety of subject areas is preferred over insertion of EE as a separate course. Responses to this survey are also consistent with current views that EE should span ALL grade levels, K-college. Results of this survey regarding preferred subject areas for inclusion of EE parallel those from U.S.-based surveys of public school teachers. In their survey of elementary school teachers in Washington and Idaho, Ham and Sewing (1988) reported that EE is most often taught in science classes, followed by social studies and then reading or language arts classes. Sadly, both U.S. and Latin American teachers both appear to share the widely held misconception that environmental education is science education. Since many elementary teachers have neutral to negative attitudes toward science, they also have neutral to negative attitudes toward EE.

These survey results parallel those of Lane, Wilke, Champeau and Sivek (1994) who reported that many teachers do not implement EE lessons because they do not see the relatedness of these lessons to subjects other than science and social studies.

Interestingly, although scientists throughout the world affirm the view that human population growth is the most significant environmental issue facing the world today, neither elementary students nor community members in Latin America view this as an important issue. In this survey, even elementary teachers do not seem to perceive the importance of human population growth as an environmental issue. All three groups (teachers, students, and community members) are most concerned about pollution, an issue that affects them most directly and is most easily visible. For all three groups, very important, but more complex and less obvious environmental issues, such as ozone depletion, global warming and energy issues were not viewed as significant.

Summary and Recommendations

Although teachers responding to this survey would like to spend more time on EE, they are spending much less time than they would like. Developing quality regional EE curricula as well as offering teacher workshops or classes in environmental education methods would improve teacher comfort with infusing EE in subject areas other than science. Research has shown that when pre-service EE preparation is mandated, as it is in Wisconsin, teachers receive more EE preparation and as a result implement more EE, have more positive attitudes toward EE, and are more confident about teaching EE than teachers in states where EE preparation is not mandated (Plevyak, L.H., Bendixen-Noe, M., Henderson, J., Roth, R.E., & Wilke, R., 2001). Therefore, it is important that teachers receive EE preservice training and follow up EE inserrvice training for

the successful implementation of EE in schools (Plevyak, et al., 2001). Although no question addressed how much teachers used natural areas, the development of curriculum for these areas would also be beneficial.

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